

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

In re Application of:

**T. Nakamura**

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Examiner: **J. Karol**

)

Serial No.: **10/501,462**

)

Group Art Unit: **1617**

)

Filed: **December 13, 2004**

)

Docket: **TOS-157-USA-PCT**

For: **Water-in-Oil Emulsion Composition And Emulsion Cosmetic  
Comprising The Same**

**APPELLANT'S BRIEF ON APPEAL**

Mail Stop Appeal Brief-Patents  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir: The undersigned respectfully appeals to the Patent Board of Appeal and Interferences the final rejection of the above-identified application, as stated in the Final Office Action mailed herein on January 28, 2008, and the Advisory Action mailed herein on June 18, 2008.

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**2. RELATED APPEALS AND INTERFERENCES**

None.

**3. STATUS OF THE CLAIMS**

1. Rejected
2. Rejected
3. Cancelled
4. Rejected
5. Cancelled
6. Rejected
7. Cancelled

The claims on appeal are claims 1, 2, 4, and 6.

**4. STATUS OF AMENDMENTS**

An Amendment After Final Rejection was filed on May 22, 2008. This Amendment has been entered and considered by the Examiner for purposes of appeal, as set forth in the Advisory Action mailed June 18, 2008. No amendment has been filed subsequent to the Amendment After Final Rejection referenced above.

## **5. SUMMARY OF THE CLAIMED SUBJECT MATTER**

The present invention provides a water-in-oil emulsified composition and emulsified cosmetic that exhibits good emulsified states, does not change over different temperatures and/or time, has superior stability, gives a non-sticky, fresh, and good tactile sensation during use (Specification, page 1, lines 7-16, and page 26, Table 2, lines 5-8).

More particularly, the present invention, as now claimed in base claim 1 herein, provides a water-in-oil emulsified composition consisting essentially of:

- (a) 0.1-20 wt% organophilic clay mineral (Specification, page 7, lines 10-12),
- (b) 10-70 wt% oil component (Specification, page 11, lines 1-3),
- (c) 0.01-10 wt% emulsifier having an HLB value of not more than 7 (Specification, page 11, lines 4 and 5, and page 12, lines 4-8), and
- (d) 0.1-80 wt% microgel (Specification, page 16, lines 11-14) having an average particle size of 0.1-1,00 micrometers (Specification, page 13, lines 7 and 8) obtained by dissolving in water or an aqueous component a hydrophilic compound having a gelation ability and consisting of one or more members selected from the group consisting of agar, carrageenan, curdlan, gelatin, gellan gum, and alginic acid (Specification, page 13, lines 9-24) followed by cooling below the gelation temperature to form a gel (Specification, page 14, lines 8-12), which is then pulverized (Specification, page 15, lines 7-9), said microgel containing only water or aqueous component and said hydrophilic compounds, wherein said emulsified composition contains 65.0 – 85.0 wt%

of water phase parts which consist of water, aqueous components, and said microgel (Specification, page 26, Table 2, lines 5-8).

The microgel obtained by pulverizing the gelled hydrophilic compounds has an average particle size of 1-300 micrometers, as required by dependent Claim 2 (Specification, page 15, lines 9-12). The water-in-oil emulsified composition can be used in an emulsified cosmetic, as called for in Claim 4 (Specification, page 16, lines 20-23). The emulsified composition of Claim 2 can also be used in conjunction with a cosmetic (Specification, page 21, lines 19-22).

**6. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL**

I. Whether Claims 1, 2, 4 and 6 are unpatentable on the ground of non-statutory obviousness-type double patenting as being unpatentable over Claims 1, 5, 7, 11 and 16 of copending application No. 09/936,317 in view of the machine translation of unexamined patent publication JP 2000-219609A by Sato, et al.

II. Whether Claims 1, 2, 4 and 6 are unpatentable under 35 U.S.C. 103(a) as being obvious over Delrieu, et al. in view of Sato, et al.



**7. ARGUMENTS**

**I. Rejection of Claims 1, 2, 4 and 6 On the Ground of Non-statutory Obviousness-Type Double Patenting Over Copending Application No. 09/936,317 In View of the Machine Translation of Unexamined Patent Application JP 2000-219609A by Sato, et al.**

In the Amendment After Final Rejection filed May 22, 2008, as well as in a telephone interview conducted on August 27, 2008, the Examiner was advised that Application Serial No. 09/936,317 is now abandoned, and that it was therefore believed that the double patenting rejection fails and is now moot. The Examiner was also advised that a continuation application was filed, but the continuation application contained entirely new claims. The Examiner's supervisor was also advised of this fact during the telephone interview of August 27, 2008, when it was respectfully requested that the double patenting rejection be withdrawn. The continuation application does not contain claims directed to a water-in-oil emulsion, as called for in the claims herein.

In view of the abandonment of application Serial No. 09/936,317, it is respectfully submitted that there can be no double patenting of claims in an abandoned application. Consequently, the rejection on double patenting should be summarily overruled and the rejection withdrawn.

Further, it is respectfully submitted that the claims of the present invention are neither anticipated by nor obvious over the new continuation application in view of Sato, et al., because the present claims concern different subject matter. It is respectfully urged that the claims of the present invention are patentably distinct from the subject matter in the new continuation application in view of Sato, et al. Consequently, the rejection fails for the reason set forth above.

## **II. Rejection Under 35 U.S.C. 103(a) Over Delrieu, e al. in view of Sato, et al.**

### **(a) Claim Construction**

In the Amendment After Final Rejection mailed May 22, 2008, applicants amended base Claim 1 to change the term “comprising” in line 1 to the term “consisting essentially of”. A number of other amendments to base Claim 1 were also made to more clearly distinguish from prior art of record, and in particular the Delrieu, et al. reference.

In an Advisory Action mailed June 18, 2008 the Examiner entered the Amendment After Final Rejection filed May 22, 2008, for purposes of appeal. A detailed action was also included, setting forth the Examiner’s position with respect to the amendment of base Claim 1, and the rejection based on Delrieu, et al. in view of Sato, et al. Appellants object to paragraph 3 bridging pages 2 and 3 in the Advisory Action in which the Examiner states:

“Applicants argue that claim 1, as amended, excludes a restraining polymer and active agent from being present in the microgel. However, for the purposes of searching for and applying prior art under 35 U.S.C. 102 and 103, absent a clear indication in the specification or

claims of what the basic and novel characteristics actually are, 'consisting essentially of' will be construed as equivalent to 'comprising'. See, e.g. PPG, 156 F.3d at 1355, 48 USPQ2d at 1355. Furthermore, Delrieu et al. teaches that the restraining polymer binds the active agent (see Column 4, lines 10-16), and that restraining polymer is water-soluble, and dissolved in water mixed with agar to form the agar gel (see column 4, lines 27-30, 62-67). Thus, the restraining polymer with the bound active agent is broadly interpreted as an 'aqueous component' as recited in the amended claim 1, because it is soluble in water."

The Examiner's position set forth above raises a number of issues concerning claim construction which should be resolved before considering the prior art, and whether the claims are anticipated or obvious over the cited prior art. These issues include:

1. Whether the Examiner applied an erroneous legal standard in interpreting base Claim 1 in the rejection.
2. Whether the PPG case cited by the Examiner stands for the proposition for which it is cited.
3. Whether the Examiner erred in concluding that the Specification or claims fail to set forth the basic and novel characteristics of the invention.

With respect to the first issue above, appellants respectfully urge that the Examiner applied an erroneous legal standard in interpreting base Claim 1, specifically in interpreting the expression "consisting essentially of" as being equivalent to the term "comprising". Appellants also take the position that the Specification sets forth and presents a clear indication of what the basic and novel characteristics are of the invention as defined by base Claim 1.

The legal precedent of the PPG case cited by the Examiner appears to be the Examiner's only legal ground for the claimed construction. Therefore, to aid the Board, Appellants have incorporated in Appendix II a copy of *PPG Industries, Inc. v. Guardian Industries, Corp.*, 48 USPQ2d 1351 (CAFC 1998).

In that case, PPG Industries, Inc. appealed from a jury verdict of the U.S. District Court For the Western District of Pennsylvania. In that original action, PPG Industries, Inc. brought suit against Guardian Industries, Corp. for patent infringement involving PPG's U.S. Patent No. 5,240,886 (the '886 patent). This patent involves a glass composition known as "solar control glass" which is used to produce tinted automobile windows. PPG Industries, Inc. sued Guardian asserting that Guardian was infringing PPG's '886 patent by marketing a type of solar control glass known as Solar Management Glass (SMG).

The '886 patent is directed to a green-tinted glass with specific light transmittance characteristics. The patent contains one independent claim as follows:

"1. A green tinted, ultraviolet absorbing glass having a base glass composition consisting essentially of:

SiO <sub>2</sub>	68-75 weight %
Na <sub>2</sub> O	10-20
CaO	5-15
MgO	0-5
Al <sub>2</sub> O <sub>3</sub>	0-5
K <sub>2</sub> O	0-5

and a colorant portion consisting essentially of:

CeO <sub>2</sub>	Less than 0.5 weight %
Total iron (as Fe <sub>2</sub> O <sub>3</sub> )	Greater than 0.85 weight %
FeO/total iron	Less than 0.275

exhibiting ultraviolet transmittance no greater than 31 percent (300 to 390 nanometers) and luminous transmittance (illuminant A) of at least 70 percent, both at a reference thickness of 3.9 millimeters.”

PPG contended in the appeal to the CAFC that the district court judge improperly construed the term “consisting essentially of” in the ‘886 patent, and that the jury verdict must be vacated because it was based on an incorrect claim construction. In commenting on this issue, the CAFC stated, in pertinent part, at page 1353 that:

“ ‘Consisting essentially of’ is a transition phrase commonly used to signal a partially open claim in a patent. Typically, ‘consisting essentially of’ precedes a list of ingredients in a composition claim or a series of steps in a process claim. By using the term ‘consisting essentially of’, the drafter signals that the invention necessarily includes the listed ingredients and is open to unlisted ingredients that do not materially affect the basic and novel properties of the invention. A ‘consisting essentially of’ claim occupies a middle ground between closed claims that are written in a ‘consisting of’ format and fully open claims that are drafted in a ‘comprising’ format. See *ex parte Davis*, 80 USPQ 448, 449-50 (Pat.Off. Bd.App. 1948); Manual of Patent Examining Procedure § 2111.03 (6<sup>th</sup> ed. 1997).”

The CAFC found at page 1354 that the district judge's instruction to the jury closely tracked the established definition of the phrase "consisting essentially of", and that this term means that the claimed glass invention has in it the ingredients that are specifically identified in the claim---. The court also found at page 1354 that other ingredients may also be present in the glass, although not specifically identified in the claim, so long as those other unlisted ingredients do not have a material effect on the basic and novel characteristics of the glass.

It is appellant's position that there is nothing in the PPG case which would justify an examiner construing the term "consisting essentially of" as being equivalent to the term "comprising" in the present case. On the contrary, it is clear from the court's discussion that the claimed invention necessarily includes listed ingredients and process steps, and is open to unlisted ingredients and process steps that do not affect basic and novel properties of the invention.

Moreover, it is appellants' position that the specification clearly sets forth the basic and novel characteristics of the invention as referred to in the third issue above. For example, the Specification points out that the basic and novel characteristics of the invention relate to a water-in-oil emulsified composition that exhibits good emulsified states, does not change over different

temperatures and/or time, has superior stability, and gives a non-sticky, fresh, and good tactile sensation during use, as well as an emulsified cosmetic using this composition (Specification, page 1, lines 7-16).

These basic and novel characteristics of the invention were also evaluated in numerous examples as set forth on page 26 in Table 2, and in an example and comparative examples set forth in the Specification on page 28, Table 3. Therefore, it is respectfully submitted that the Examiner applied an erroneous legal standard in interpreting the base Claim 1 by construing the term “consisting essentially of” as being equivalent with the term “comprising”.

It is also clear from the PPG case that this case does not stand for the proposition for which it was cited, and does not authorize the Examiner to read out of a claim the term “consisting essentially of”, and substitute for that term “comprising”. Further, it is appellants’ contention that the Examiner erred in concluding that the Specification or claims fail to set forth the basic and novel characteristics of the invention because the discussion and examples repeatedly discuss these basic and novel characteristics of the invention.

(b) The Delrieu, et al. Patent

The cited Delrieu, et al. patent provides a protective cosmetic particulate gel delivery system for a topically applied active agent comprising discrete gel particles formed of:

a) an agar gel; and

b) a restraining polymer dispersed in the agar gel, the restraining polymer having sufficient molecular weight to prevent egress of the restraining polymer from the agar gel, having retention groups to bind the active agent to the restraining polymer for retention in the gel particles and being present in a proportion sufficient to deliver an effective amount of the active agent;

wherein the gel particles are manually crushable on the skin to increase the surface area of the gel particle material and expose the restraining polymer to the skin or other body surface for release of the active agent (column 4, lines 6-20).

This protective cosmetic particulate gel delivery system provides a remedy for the problem of providing a delivery system for delivering labile and other actives to the skin, or other body surface, for topical application in a cosmetic or pharmaceutical formulation. It furthermore solves problems of delivering actives that may react undesirably with the delivery system itself, damaging the active or causing stability problems with the formulation (column 3, lines 65-67,



and column 4, lines 1-5). The active agent molecules are bound to the restraining polymer retention groups and the restraining polymer has an average molecular weight of at least 100,000 daltons (column 4, lines 20-24).

This system for delivering actives to the skin involves one or more active agents entrapped within a complexed-agar bead containing, in addition to agar, a restraining polymer to which the active bonds and from which it is not released until it reaches a target environment. The agar complexed beads can be formed in various sizes to deliver actives, including pharmaceutical drugs or even biological cells, to the skin and applied to the skin as soft, crushable beads (column 4, lines 44-52).

Many desired active materials entrapped in an agar gel leach out over time, especially if stored in an aqueous vehicle. In contrast, the restraining polymer has a molecular weight sufficient to prevent it from being released out of the agar matrix, so that, being bound to the polymer, the active is not released from the agar bead. The agar beads formed are preferably soft enough to be crushed on the skin during normal application of a cosmetic formulation (column 4, lines 53-61).

Delrieu, et al. provides a method of preparing agar-polymer complex gel particles, comprising the steps of:

a) dissolving agar and a water-soluble restraining polymer in water heated to an elevated temperature sufficient to dissolve the agar, in a proportion of agar to water effective to form a gel at lower temperatures;

b) cooling the hot agar solution to an intermediate temperature above the gelling point of the agar solution; and

c) discharging the cooled agar-polymer solution through a needle to form drops; and

d) exposing the drops to a hydrophobic liquid maintained at a temperature below the agar gelling point;

whereby the drops are formed into gel beads incorporating the restraining polymer. An active agent can be admixed in step a) or, if temperature-sensitive, in step b) whereby the active agent is incorporated in the gel beads (column 4, lines 62-67, and column 5, lines 1-12).

Instead of injecting drops of warm agar solution into a cold oil bath, the warm solution may be dripped from above on to the surface of cold oily medium (column 12, lines 64-67).

Cosmetic formulations, diluents or cosmetic vehicles are compositions applied externally to the skin, hair or nails for purposes of cleansing, beautifying, conditioning or protecting the body surface. Cosmetic formulations include but are not limited to water-in-oil or oil-in-water emulsions in cream or lotion form, sunscreens, toners, aspirants, facial make-ups, powders, and skin cleansing compositions (column 11, lines 63-67, and column 12, lines 1-3).

A particularly preferred embodiment of particulate cosmetic gel carrier comprises relatively small agar particles or agar beads 10 having an average particle size measured in millimeters. The particles are small enough for cosmetic user, and preferably do not exceed 10

mm. in diameter on average, but not so small as to penetrate the skin or skin pores. A minimum diameter, on average, is about 0.05 mm (50 microns) (column 5, lines 42-49).

In an optional method of preparing the beads, the temperature is stabilized at an intermediate temperature and the liquid solution or dispersion is then pumped through a needle submerged in a liquid paraffin oil bath maintained at a temperature below the gelling point of the solution or dispersion. Because water and oil are immiscible, the pump solution of warm agar, polymer and active agent form droplets when extruded into the oil. The low temperature of the oil freezes the droplets in shape, causing the agar medium to gel into agar-polymer complexed beads. These beads are separated, washed to remove the paraffin oil, filtered and dried in a separation step. Large gel particles, up to approximately 2 mm in diameter, can be colored, filled with actives, and formulated in a transparent gel (column 13, lines 47-67).

In preparing the agar-gel beads or formulating them into cosmetics, care should be taken to avoid exposing heat-sensitive agents to excessive heat, by adding them at lower temperatures, adding beads to cosmetic formulations after emulsification or by exposing beads containing such heat-sensitive actives for only short periods of time insufficient to be damaging (column 7, lines 37-45).

As suggested in Fig. 2, agar beads can be manually crushed on the skin, preferably by an ordinary spreading or massaging action of one or more of the user's fingers or hands. Continued spreading and massaging by the user's fingers spreads the agar gel complex, with restraining polymer over the skin surface (column 6, lines 14-30).

**(c) The Sato, et al. Reference**

Sato, et al. discloses a composition including (A) a volatile silicone oil including (i) decamethylcyclopentasiloxane and (ii) octamethylcyclotetrasiloxane at a weight ratio the component i/ii of (19:1) to (7:3), (B) an organic modified clay mineral and (C) an emulsifier having HLB of 7 or less in the oil phase. The clay mineral is present in the composition in 0.1 to 10% by weight, and the emulsifier is present in 0.1 to 15% by weight. Sato, et al. discloses that the compositions are useful as cosmetic compositions and afford high stability at low temperatures (see Abstract).

**(d) Discussion of References**

Another issue presented is whether the Examiner erred in concluding in the Advisory Action mailed June 18, 2008, on page 3, first paragraph, that the restraining polymer with the bound active agent disclosed in Delrieu, et al. can be interpreted as an “aqueous component” as recited in amended Claim 1.

Appellants respectfully urge that the Examiner’s actions are unwarranted in equating the restraining polymer of Delrieu, et al. with the aqueous component recited in Claim 1 for a number of reasons.

First, the microgel called for in Claim 1 of the present application is set forth as a product by process. The process calls for dissolving in water or an aqueous component a hydrophilic compound having a gelation ability and consisting of one or more members selected from the group consisting of agar, carrageenan, curdlan, gelatin, gellan gum, and alginic acid.

Second, Claim 1 of the present application also requires that this mixture is then cooled below the gelation temperature to form a gel, which is then pulverized.

Third, Claim 1 of the present application further requires that the microgel containing only water or aqueous component and said hydrophobic compounds be emulsified in a composition containing 65.0 – 85.0 wt% of water phase parts which consist of water, aqueous component, and said microgel.

In contrast, Delrieu, et al. does not cool the aqueous solution containing agar below the gelation temperature to form a gel, but instead, cools the hot agar solution to only an intermediate temperature above the gelling point of the agar solution, and then discharges the cooled agar-polymer solution through a needle to form drops which are then exposed to a hydrophobic liquid maintained at a temperature below the agar gelling point, whereby the drops are formed into gel beads incorporating the restrained polymer. These agar-polymer complex beads are then separated, washed to remove the hydrophobic liquid such as paraffin oil, filtered, and dried in a separation step.

These beads of Delrieu, et al. are not crushed to form a microgel as required by Claim 1 of the present application. It is respectfully submitted that one of ordinary skill in the art would not crush the beads of Delrieu, et al. since crushing of the bead would result in release of the active compound within the gelled bead. Consequently, crushing the beads of Delrieu, et al. would defeat the purpose of Delrieu, et al. of providing a product that can be used for topical application of the beads to release the active compound within the bead on to the skin's surface.

Further, there is no disclosure whatever in Delrieu, et al. of forming an emulsified composition containing 65.0 – 85.0 wt% of water phase parts consisting of water, aqueous components, and said microgel. On the contrary, that teaching or suggestion comes only from the present application, and the importance of this feature is illustrated in the Specification in the examples and comparative examples.

Table 3 on page 28 of the Specification herein sets forth in tabular form the evaluation of five different compositions, including their properties such as sensation during use, emulsification properties, and stability. It can be seen from Table 3 that water-in-oil emulsions containing more than 85 wt% of a water phase part exhibits severe separation of the emulsified parts when the water phase parts 1 and 2 were 92%, that is, above the range called for in Claim 1.

Further, it can be seen from Table 1 on page 25 of the Specification herein that water phase parts 1-3 were crushed whereas water phase parts 4 and 5 were not crushed. Table 3, on page 28 of the Specification herein, demonstrates that water phase parts 4 and 5 which were not crushed exhibited unsatisfactory properties such as sticky sensation. Also, water phase part 4 exhibited severe separation of the emulsified parts during the stability tests at 37 and 50°C. In views of the foregoing, it is respectfully urged that the examples and comparative examples in the Specification illustrate the critical nature of carrying out the process steps now called for in Claim 1 in forming the microgel, and of using only the water phase parts in the proportions recited in Claim 1 herein. For these reasons, it is respectfully urged that the Examiner erred in equating the restraining polymer of Delrieu, et al. with the aqueous component now called for in Claim 1.

In the rejection, the Examiner recognizes that the primary reference of Delrieu, et al. “does not disclose any cosmetic compositions where the other ingredients are specifically disclosed, or the specific percentages for the components”. It is therefore clear that the primary reference of Delrieu, et al. fails to disclose the particular water-in-oil emulsion called for in the claims herein, especially the particular components and the percentages of each of the components.

The Examiner then relies upon the secondary reference of Sato, et al. to supply details concerning the water-in-oil emulsion. Specifically, the Examiner relies upon Sato, et al. to show a water-in-oil emulsion containing an organophilic clay mineral and an emulsifier having an HLB value of seven or less in the oil phase. However, the Sato, et al. reference fails to cure the deficiencies of the primary reference of Delrieu, et al., since there is no disclosure in the secondary reference of a water-in-oil emulsion containing a microgel as called for in Claim 1 herein.

It is respectfully urged that there is no teaching, suggestion or motivation in either of the references relied upon to combine them in the manner suggested by the Examiner. It is clear from the discussion above that the agar gel particles of the Delrieu, et al. reference do not function in the same way as the microgel particles called for in Claim 1 herein. It is respectfully pointed out that the agar gel particles in Delrieu, et al. contain a restraining polymer dispersed in the agar gel which differs from the crushed microgel called for in Claim 1 herein. In view of these differences and the lack of any disclosure in the Examiner’s primary reference of Delrieu, et al. of the

components forming the water-in-oil emulsion, it is respectfully submitted that the Examiner's combination of references fail to teach or suggest the emulsion now called for in the claims herein.

It is respectfully urged that, in the rejection, the Examiner has also failed to comply with the dictates of the recent Supreme Court decision of *KSR International Co. v. Teleflex, Inc., et al.* 127 S.Ct. 1727 (2007), wherein the Court indicated, on page 2, that "the framework for applying the statutory language of §103" is found in *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1 (1966). In particular, "[u]nder §103, the scope and content of the prior art are to be determined; differences between the prior art and claims at issue are to be determined; and the level of ordinary skill in the pertinent art are to be resolved. Against this background the obviousness or nonobviousness of the subject matter is determined."

In addition, after the Supreme Court decision in *KSR International Co. v. Teleflex, Inc., et al.* cited above, the Deputy Commissioner of Operations for the USPTO issued an internal memorandum to all technology directors instructing them that when making an obviousness rejection "it remains necessary to identify the reason why a person of ordinary skill in the art would have combined the prior art elements in the manner claimed" (see internal memorandum of Focarino, Margaret, Deputy Commissioner of Operations, USPTO, to USPTO technology art unit directors, May 3, 2006).

It is respectfully urged that, in the rejection, the Examiner failed to follow the dictates of the above cited *KSR International Co. v. Teleflex, Inc., et al.*, *Graham v. John Deere Co. of Kansas City*, and the above mentioned internal memorandum. It is believed that the Examiner



failed to provide a valid reason why a person of ordinary skill in the art would have combined the prior art elements in the manner claimed. Specifically, the reason given by the Examiner is identical to statements in the Specification on page 1, lines 19-23. However, the Specification goes on to state, on page 1, lines 23-25, that if you increase the viscosity of the oil phase by blending in a solid and semi-solid oil component to produce a more highly stable emulsion, an undesirable oil and sticky sensation during use will result.

Therefore, the problem solved by the present invention is to produce a water-in-oil emulsion having a satisfactory sensation during use of smoothness, moistening sensation, and non-stickiness, as well as satisfactory emulsion properties, long term stability, and stability over high and low temperature ranges. Accordingly, the present inventors set forth in the Specification numerous test examples of the present invention, and comparative tests of similar compositions that do not have all of the components called for in the claims herein. These numerous test results are set forth in Table 1 on page 25, Table 2 on page 26, and Table 3 on page 28.

There it can be seen that some compositions containing the claimed organophilic clay mineral may produce a stable emulsion but fail to have satisfactory properties of non-stickiness, smoothness, or moistening sensation. It is respectfully submitted that the reasons for the Examiners combining of references fails to take into account the problems confronted by the inventors and the scope and content of the prior art as a whole. For these reasons, it is believed that the Examiners reasons for combining the references fails to meet the legal standards set forth in the above cited authorities. Consequently, the Board of Appeals would be justified in overruling the Examiner's rejections.

**8. SUMMARY**

The first of the issues is whether the non-statutory obviousness-type double patenting rejection of Claims 1, 2, 4 and 6 over copending application No. 09/936,317, in view of machine translation of unexamined patent application JP 2000-219609 A of Sato, et al., is a valid rejection. The copending application No. 09/936,317 is abandoned. It is therefore believed that there is no statutory basis for applying a double patenting rejection to claims in an abandoned application. It is therefore respectfully requested that the Board overrule the Examiner's rejection.

With regard to the rejection of Claims 1, 2, 4 and 6 over Delrieu, et al. in view of Sato, et al., the Examiner erred by applying an erroneous legal standard in interpreting base Claim 1 in the rejection. In this regard, the Examiner's interpretation of the expression "consisting essentially of" as being equivalent to "comprising" is contrary to the PPG case upon which the Examiner relies. Appellants take the position that the PPG case does not stand for the proposition cited by the Examiner. Moreover, the Examiner erred in concluding that the Specification or claims failed to set forth the basic and novel characteristics of the invention. The Specification sets forth the basic and novel characteristics of the invention in numerous places throughout the application, and emphasizes the importance of certain features by presenting numerous examples and comparative examples which are set forth and summarized in the Specification in Tables 1-3.

Claim 1 of the present application requires that a microgel is obtained according to a product-by-process which includes cooling a solution of the hydrophilic compound or an aqueous

component thereof below the gelation temperature to form a gel which is then pulverized. The pulverized microgel is then incorporated in water or an aqueous component to form an water-in-oil emulsion which contains 65.0- 85.0 wt% of water phase parts which consist of water, aqueous component, and said microgel.

In contrast, Delrieu, et al. partially cools the solution containing agar and a polymer to a temperature above the gelation temperature of the agar, and then discharges the cooled agar-polymer solution through a needle to form drops, and then exposes these drops to a hydrophobic liquid such as a waxy material maintained at a temperature below the agar gelling point to form beads. These beads are not crushed, nor is there any disclosure of incorporating Delrieu's crushed beads into only water or aqueous component to form an emulsified composition containing 65.0 -85.0 wt% of water phase parts consisting of water, aqueous component and a microgel.

It is therefore clear that Delrieu, et al. in no way discloses the product by process used in the present invention to produce the microgel and water-in-oil emulsion. The importance of using a crushed microgel as called for in Claim 1 is illustrated in the examples and comparative examples which show that water-in-oil emulsions which fail to include a crushed microgel do not have the desired properties of sensation during use, emulsion properties and stability (See Table 3 on page 28 of the Specification).

Neither the primary reference of Delrieu, et al. nor the secondary reference of Sato disclose producing a microgel according to the process called for in Claim 1 herein. It is clear that if a water-in-oil emulsion was prepared according to these references, it would not contain a

microgel in a water-in-oil emulsion having the physical properties sought by the present invention. The importance of having a crushed microgel is shown by the examples and comparative examples illustrated in Table 3 herein.

Further, one skilled in the art would not crush the beads of Delrieu, et al. to form a microgel, because these beads are designed to release an active ingredient only when rubbed on the skin.

For these reasons, it is respectfully urged that the Examiner's rejection based on obviousness is unwarranted, and the Board would therefore be justified in overruling this rejection.

Respectfully submitted,

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**APPENDIX I (CLAIMS APPENDIX)**

The Claims on Appeal

1. A water-in-oil emulsified composition consisting essentially of:

(a) 0.1-20 wt% organophilic clay mineral,

(b) 10-70 wt% oil component,

(c) 0.01-10 wt% emulsifier having an HLB value of not more than 7, and

(d) 0.1-80 wt% microgel having an average particle size of 0.1-1,00 micrometers

obtained by dissolving in water or an aqueous component a hydrophilic compound having a gelation ability and consisting of one or more members selected from the group consisting of agar, carrageenan, curdlan, gelatin, gellan gum, and alginic acid followed by cooling below the gelation temperature to form a gel, which is then pulverized, said microgel containing only water or aqueous component and said hydrophilic compounds, wherein said emulsified composition contains 65.0 – 85.0 wt% of water phase parts which consist of water, aqueous components, and said microgel.

2. The water-in-oil emulsified composition of claim 1, wherein the average particle size of the microgel is 1-300 micrometers.

4. An emulsified cosmetic comprising the water-in-oil emulsified composition of claim

1.

6. An emulsified cosmetic comprising the water-in-oil emulsified composition of claim

2.

**APPENDIX II (EVIDENCE APPENDIX)**

Evidence

Copy of *PPG Industries, Inc. v. Guardian Industries, Corp.*, 48 USPQ 2d 1351 (CAFC 1998).

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the Belgian Judgment under the standards articulated by the Supreme Court in *Hilton* or in the Restatement of Foreign Relations Law of the United States. Accordingly, summary judgment for recognition/enforcement of the Belgian Judgment is GRANTED.

Glaverbel is awarded two million (2,000,000) Belgian francs. Glaverbel is also entitled to post-judgment interest from the date of entry of this Order, calculated pursuant to 28 U.S.C. § 1961. In addition, Glaverbel requested prejudgment interest in its motion for summary judgment. Pursuant to *Brooms v. Regal Tube Co.*, 881 F.2d 412, 424 (7th Cir. 1989), a district court may award prejudgment interest even if it is not requested in the Complaint, as long as the request is made by the time of post-trial motions. Accordingly, the Court awards Glaverbel prejudgment interest.

All awards granted to Glaverbel are subject to calculation of the prejudgment interest rate and current exchange rate as of the date of this Order. These rates will be determined and entered as part of the final judgment in this case within the next fifteen days. During that time period, the parties are invited to file with the Court any briefs addressing the Court's methods or sources for its calculation of the prejudgment interest rate.

U.S. Court of Appeals  
Federal Circuit

PPG Industries Inc. v. Guardian Industries Corp.

No. 97-1513

Decided October 1, 1998

PATENTS

1. Patent construction — Claims — Defining terms (§125.1305)

Use of term "consisting essentially of," preceding list of ingredients in composition claim, typically means that invention necessarily includes listed ingredients and is open to unlisted ingredients that do not materially affect basic and novel properties of invention; "consisting essentially of" claim occupies middle ground between closed claims that are written in "consisting of" format and fully open claims that are drafted in "comprising" format.

2. Patent construction — Claims — In general (§125.1301)

Federal district court, in construing claim for tinted glass composition drafted in "con-

sisting essentially of" format, was not required to determine whether iron sulfide, which is not among listed ingredients, could have material effect on basic and novel characteristics of claimed invention, since fact that claim contains some inherent imprecision resulting from use of term "consisting essentially of" does not mean that court, under rubric of claim construction, may give claim whatever additional precision or specificity is necessary to facilitate comparison between claim and accused product; rather, task of determining whether construed claim reads on accused product is for finder of fact.

3. Patent construction — Claims — Defining terms (§125.1305)

Specification of patent for tinted glass composition does not require that claim employing "consisting essentially of" language be construed to encompass composition having iron sulfide, which is not among listed ingredients, in amount present in accused product, even though specification states that residual amounts of melting and firing aids "such as SO<sub>2</sub>" in glass "can vary and have no significant effect on the properties of the glass product," since plaintiff has not shown that person of skill in art would understand term "SO<sub>2</sub>" to encompass all sulfur compounds, since interpretation that includes all sulfur compounds would call into question accuracy of statement in specification, and since plaintiff has not offered satisfactory alternative construction.

4. Infringement — Literal infringement (§120.65)

Substantial evidence supports jury's finding that presence of iron sulfide in tinted glass composition has material effect on basic and novel characteristics of invention of patent in suit, such that accused glass containing iron sulfide does not "consist essentially of" ingredients listed in asserted claim, since defendant introduced evidence, including deposition testimony from plaintiff's expert, tending to show that those of skill in art would regard even small changes in color or transmittance of tinted glass caused by iron sulfide to be material.

Particular patents — Chemical — Solar control glass

5,240,886, Gulotta and Shelestak, ultra-violet absorbing, green tinted glass, judgment of non-infringement affirmed.



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Appeal from the U.S. District Court for the Western District of Pennsylvania, Lancaster, J.

Action by PPG Industries Inc. against Guardian Industries Corp. for patent infringement. From judgment of non-infringement following jury trial, plaintiff appeals. Affirmed; Michel, J., dissenting in separate opinion.

Prior decision: 37 USPQ2d 1618.

Ford F. Parabow, Donald R. Dunner, and Darrel C. Karl, of Flannegan, Henderson, Parabow, Garrett & Dunner, Washington, D.C.; Arland T. Stein and Robert A. Matthews Jr., of Reed, Smith, Shaw & McClay, Pittsburgh, Pa., for plaintiff-appellant.

Robert G. Krupka, of Kirkland & Ellis, Chicago, Ill.; Jeffrey D. Mills, Jay I. Alexander, and Gregg P. LoCascio, of Kirkland & Ellis, Washington, D.C.; John M. Desmarais, New York, N.Y., for defendant-appellee.

Before Michel, Plager, and Bryson, circuit judges.

Bryson, J.

This case involves a type of glass composition known as "solar control glass," which is used to produce tinted automobile windows. PPG Industries, Inc., sued Guardian Industries Corp. in the United States District Court for the Western District of Pennsylvania, asserting that Guardian was infringing PPG's U.S. Patent No. 5,240,886 (the '886 patent) by marketing a type of solar control glass known as Solar Management Glass (SMG). After a ten-day trial, a jury concluded that SMG glass did not fall within the scope of the '886 patent claims. The district judge subsequently entered judgment on the verdict. On appeal, PPG argues that the district judge erred in construing the claims of PPG's patent and, alternatively, that substantial evidence did not support the jury's verdict of non-infringement. We affirm.

I

PPG and Guardian both manufacture green-tinted solar control glass. The glass filters out much of the ultraviolet and infrared radiation from the sun while maximizing the transmission of light in the visible spectrum. Infrared radiation transmits heat energy, and ultraviolet radiation can be damaging to materials. The capacity of solar

control glass to block the transmission of sunlight at those wavelengths, while remaining largely transparent to visible light, makes the product particularly well suited for use in automobile windows.

Guardian began selling SMG glass in 1992. PPG's '886 patent issued on August 31, 1993. After licensing negotiations failed, PPG sued Guardian for infringing the patent.

The '886 patent is directed to a green-tinted glass with specific light transmittance characteristics. The patent contains one independent claim, which reads as follows:

1. A green tinted, ultraviolet absorbing glass having a base glass composition consisting essentially of:

SiO <sub>2</sub>	68-75 weight %
Na <sub>2</sub> O	10-20
CaO	5-15
MgO	0-5
Al <sub>2</sub> O <sub>3</sub>	0-5
K <sub>2</sub> O	0-5

and a colorant portion consisting essentially of:

CeO <sub>2</sub>	Less than 0.5 weight %
Total iron (as Fe <sub>2</sub> O <sub>3</sub> )	Greater than 0.85 weight %
FeO/total iron	Less than 0.275

exhibiting ultraviolet transmittance no greater than 31 percent (300 to 390 nanometers) and luminous transmittance (illuminant A) of at least 70 percent, both at a reference thickness of 3.9 millimeters.

Claim 4, the only claim asserted against Guardian at trial, adds an additional limitation that the glass must exhibit a total solar energy transmittance of less than 45 percent at a reference thickness of 3.9 millimeters.

The '886 patent identifies iron and cerium oxide as colorants. Iron may be present in either the ferrous (Fe<sup>2+</sup>) or ferric (Fe<sup>3+</sup>) states. Ferrous iron gives the glass a greenish tint and is an infrared radiation absorber. Ferric iron gives the glass a yellowish tint and acts to absorb ultraviolet radiation.

One of the advantages of the invention described by the '886 patent is that the glass requires only minimal amounts of cerium oxide to achieve the desired light transmittance properties. Cerium oxide is expensive and presents special difficulties in the manufacturing process. PPG's patent teaches that using relatively high concentrations of iron oxides as colorants and maintaining the glass composition at a low redox ratio (the ratio of ferrous iron to total iron) reduces or eliminates the need for cerium oxide in the glass. Guardian's SMG glass

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uses similarly high levels of iron oxide as a colorant and uses no cerium oxide.

PPG and Guardian use similar technologies to produce tinted glass. The glass is produced by the "float" process, which refers to the method of cooling the glass after it exits the furnace by floating it on a pool of molten tin. The tin provides an extremely flat surface for cooling the glass, so that sheets of glass can be produced at precise, uniform thicknesses.

Two features of the float process are particularly pertinent to the current dispute. The raw materials for the glass are typically added together in a furnace, where they are mixed and melted. As the various glass constituents melt, they release gas. That is potentially a problem because some of the gas may remain trapped in small bubbles in the glass. If the bubbles remain in the final product, they result in visible imperfections in the glass. To avoid that problem, various melting and fining aids are added to the glass mixture in the furnace. Sodium sulfate ( $\text{Na}_2\text{SO}_4$ ) is one such additive. In the mixture, much of the sulfate decomposes into sulfur dioxide and oxygen. Those gases cause the trapped gas bubbles to dissipate, leaving few visible imperfections in the glass. Some of the sulfate introduced into the batch remains dissolved in the glass composition, but it is colorless and has no effect on the transmittance properties of the glass.

The second pertinent feature of the process is the interaction between the glass and the pool of molten tin on which it floats after exiting the furnace. Both Guardian's SMG manufacturing process and PPG's patent specification require that the glass be produced at a low redox ratio, which means that the glass is produced under oxidizing conditions. Although the redox ratio is commonly reported for the glass as a whole, oxidation conditions are considerably different at the boundary of the glass and the molten tin. That interface zone experiences strong reducing conditions, resulting in a high redox ratio. Under those conditions, oxygen atoms are stripped away from the sulfate remaining in the glass, reducing it to sulfide ions ( $\text{S}^{2-}$ ). When the sulfide ions combine with ferric iron, the resulting compound ( $\text{FeS}_2$ ) imparts a yellowish-brown coloration to the glass. Testimony at trial indicated that iron sulfide formation could be observed to a depth of about 20 microns from the glass surface contacting the molten tin. That narrow band is commonly referred to as the "tin layer" of the glass.

At the inception of this suit, the chemistry of the tin layer was not an issue. PPG sought a preliminary injunction and Guardian defended on the ground that SMG glass contained iron sulfide, an ingredient unrelated in PPG's patent, as a colorant. The district judge credited testimony from PPG's experts that iron sulfide could not form in Guardian's glass because of the low redox ratio at which the glass was produced. As a result, the district judge rejected Guardian's "sulfide defense" and granted a preliminary injunction. On appeal, this court affirmed. See *PPG Indus., Inc. v. Guardian Indus. Corp.*, 75 F.3d 1558, 1565, 37 USPQ2d 1618, 1624 (Fed. Cir. 1996).

By the time of trial, Guardian had refined its non-infringement position. While Guardian still claimed that the presence of iron sulfide differentiated SMG glass from PPG's patent, Guardian now identified the primary source of the iron sulfide as the tin layer of the SMG glass. Witnesses for each side agreed that the iron sulfide in the tin layer of the SMG glass resulted in a 0.5% change in total light transmittance and a small change in color, measured by a 3 nanometer shift in the dominant wavelength of the light transmitted by the glass. PPG argued that the small changes in the properties of the glass attributable to the iron sulfide in the tin layer did not avoid infringement of the claims of the '886 patent. PPG also contended that the iron sulfide in the tin layer was an inherent byproduct of the float glass manufacturing process used by both Guardian and PPG. The jury, however, returned a verdict in Guardian's favor, finding that the SMG glass did not infringe the '886 patent. In view of its infringement verdict, the jury did not reach the merits of Guardian's invalidity defense. PPG appealed the denial of its motions for judgment as a matter of law and for a new trial.

## II.

[1] PPG contends that the district judge improperly construed the term "consisting essentially of" in the '886 patent and that the jury verdict must be vacated because it was based on an incorrect claim construction. "Consisting essentially of" is a transition phrase commonly used to signal a partially open claim in a patent. Typically, "consisting essentially of" precedes a list of ingredients in a composition claim or a series of steps in a process claim. By using the term "consisting essentially of," the drafter signals that the invention necessarily includes the listed ingredients and is open to

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unlisted ingredients that do not materially affect the basic and novel properties of the invention. A "consisting essentially of" claim occupies a middle ground between closed claims that are written in a "consisting of" format and fully open claims that are drafted in a "comprising" format. See *Ex parte Davis*, 80 USPQ 448, 449-50 (Pat. Off. Bd. App. 1948); *Manual of Patent Examining Procedure* § 2111.03 (6th ed. 1997).

The district judge's instructions to the jury closely tracked the established definition of the phrase "consisting essentially of." The jury was instructed that "consisting essentially of" means that "the claimed glass invention has in it the ingredients that are specifically identified in the claim. . . . Other ingredients may also be present in the glass, although not specifically identified in the claim, so long as those other unlisted ingredients do not have a material effect on the basic and novel characteristics of the glass." PPG and Guardian agreed that the basic and novel characteristics of the glass are color, composition, and light transmittance. The court added that an ingredient has a material effect on the characteristics of the glass "if the effect is of importance or of consequence to those of ordinary skill in the art of glass making." The jury was further instructed that it was to determine as a factual matter "whether the presence of sulfur found in the sulfide form has a material effect on the basic and novel properties of the glass."

PPG raises two issues with respect to the district judge's instructions. First, PPG argues that the determination whether iron sulfide has a "material effect" on the invention is a matter of claim construction and that the judge erred in placing that issue before the jury as part of the infringement determination. Second, PPG argues that the judge failed to construe the term "material effect" in a manner consistent with the patent specification, leaving the jury free to apply a different test as to what constitutes a material effect on the total light transmittance and color of the glass.

#### A

PPG's broadest argument is that the district judge was required to determine as a part of claim construction whether iron sulfide could have a material effect on the basic and novel characteristics of the claimed glass. PPG begins with the premise that a patentee is entitled to have the meaning and scope of its patent determined as a

matter of law. See *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 979, 34 USPQ2d 1321, 1329 (Fed. Cir. 1995) (in banc), *aff'd*, 517 U.S. 370, 38 USPQ2d 1461 (1996). That principle is undermined, argues PPG, by allowing juries to determine whether a particular unlisted element has a material effect on the invention. Because two different juries could come to different conclusions with respect to the materiality of the same unlisted ingredient, PPG contends, the claim has not been construed with sufficient specificity.

[2] Claims are often drafted using terminology that is not as precise or specific as it might be. As long as the result complies with the statutory requirement to "particularly point[] out and distinctly claim[] the subject matter which the applicant regards as his invention," 35 U.S.C. § 112, para. 2, that practice is permissible. That does not mean, however, that a court, under the rubric of claim construction, may give a claim whatever additional precision or specificity is necessary to facilitate a comparison between the claim and the accused product. Rather, after the court has defined the claim with whatever specificity and precision is warranted by the language of the claim and the evidence bearing on the proper construction, the task of determining whether the construed claim reads on the accused product is for the finder of fact. See, e.g., *W.L. Gore & Assoc., Inc. v. Garlock, Inc.*, 842 F.2d 1275, 1280, 6 USPQ2d 1277, 1282 (Fed. Cir. 1988) (whether claim limitation of "about 100% per second" is literally met is a question of fact).

The proper allocation of the tasks of construing a claim and determining infringement in a case in which a claim contains an imprecise limitation is demonstrated by our decision in *Modine Manufacturing Co. v. United States International Trade Commission*, 75 F.3d 1545, 37 USPQ2d 1609 (Fed. Cir. 1996). In *Modine*, the patentee had claimed a condenser for an automotive air conditioning system with "relatively small" hydraulic diameters. *Id.* at 1549. From the specification and prosecution history of the patent, this court concluded that the term "relatively small" should be interpreted as referring to a range of diameters of "about 0.015-0.040" inches. *Id.* at 1554. Instead of attempting to define that range more precisely, we remanded the case for a factual determination of whether the claim limitation was literally infringed by accused products having diameters ranging from 0.0424 to 0.0682 inch. *Id.* at 1554-55.

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Like the patents at issue in *Modine* and *Gore*, the '886 patent contains some inherent imprecision resulting from the use of the term "consisting essentially of." As PPG points out, it is possible that under such circumstances different finders of fact could reach different conclusions regarding whether the effect of a particular unlisted ingredient in an accused product is material, and thus whether that product infringes. That possibility, however, is a necessary consequence of treating infringement as a question of fact subject to deferential review. It does not mean that the claim was improperly construed as an initial matter.

## B

PPG further argues that even if the jury was correctly delegated the task of deciding whether iron sulfide in SMO glass materially affects the properties of the glass, the definition of "consisting essentially of" given to the jury should have reflected information in the patent specification concerning what effects the inventors considered to be material. Under well-settled principles, PPG was entitled to provide its own definition for the terms used in its patent claim, including the transition phrase "consisting essentially of." In *Water Technologies Corp. v. Calco, Ltd.*, 850 F.2d 660, 666, 7 USPQ2d 1097, 1102 (Fed. Cir. 1988), for example, this court looked to the prosecution history of a patent to determine whether an unlisted ingredient was excluded from the scope of a "consisting essentially of" claim. Thus, PPG could have defined the scope of the phrase "consisting essentially of" for purposes of its patent by making clear in its specification what it regarded as constituting a material change in the basic and novel characteristics of the invention. The question for our decision is whether PPG did so.

PPG argues that it provided such a definition of materiality, basing its argument on a sentence in the specification that describes the method of producing the claimed glass composition. That sentence states that "[m]elting and fining aids such as SO<sub>2</sub> are useful during production of the glass, but their residual amounts in the glass may vary and have no significant effect on the properties of the glass product." PPG asserts that one of skill in the art would understand the term "SO<sub>2</sub>" to encompass all sulfur compounds, including iron sulfide. Because the specification teaches that residual amounts of melting and fining aids such as SO<sub>2</sub> have no significant effect on the properties of the

glass, PPG argues that the effect of any iron sulfide in the glass recited in the claims must be deemed not to be material. Essentially, PPG is arguing that the reference to SO<sub>2</sub> in the specification means that regardless of what effect sulfur compounds such as iron sulfide have on the properties of the glass, the effect cannot be considered "significant" for purposes of the '886 patent.

PPG's argument necessarily depends on its assertion that "SO<sub>2</sub>" should be ascribed a meaning in the patent different from its ordinary meaning as the chemical formula representing a molecule containing one sulfur atom and three oxygen atoms. Although the specification is silent on that point, PPG was entitled to produce extrinsic evidence to show how one of skill in the art would interpret "SO<sub>2</sub>" in the context in which it was used. See *Pall Corp. v. Micron Separations, Inc.*, 66 F.3d 1211, 1216, 36 USPQ2d 1225, 1228 (Fed. Cir. 1995).

The principal evidence on this point adduced by PPG was testimony that it is a common practice in the glassmaking art to report the weight percent of sulfur in glass as "SO<sub>2</sub>" regardless of the form in which the sulfur is actually present. That practice was apparently adopted as a convention because the most convenient ways of measuring the amount of sulfur in glass do not distinguish among the various sulfur compounds.

[3] While not disputing that "SO<sub>2</sub>" is frequently used to denote the amount of sulfur in glass, Guardian introduced evidence to show that one of skill in the art would not believe that "SO<sub>2</sub>" in the critical specification sentence was intended to cover all forms of sulfur. Instead, Guardian argued that "SO<sub>2</sub>" as used in the specification, refers only to the dissolved sulfate retained in the glass composition.

Guardian notes that the sentence on which PPG relies is directed to the use of "melting and fining aids" in glass. While sulfate is a well-known fining aid in glass, Guardian points out that other sulfur compounds are not suitable for use in that capacity. For that reason, Guardian argues, one of skill in the art would not expect a reference to "SO<sub>2</sub>" in the context of melting and fining aids to encompass wholly different sulfur compounds, such as iron sulfide, with entirely different properties.

Guardian also argues that the reference to "SO<sub>2</sub>" must be limited to dissolved sulfates because an interpretation that includes all sulfur compounds would call into question the accuracy of the statement in the specification that the "residual amounts [of SO<sub>2</sub>] in the glass can vary and have no

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significant effect on the properties of the glass product." Witnesses for both parties agreed that residual sulfate in the glass could vary substantially as a result of the production parameters without having a measurable effect on the resulting glass product. Because iron sulfide is a strong colorant, however, the properties of the glass would vary significantly with the amount of sulfur in the glass in the form of iron sulfide. Accordingly, we interpret the sentence in the specification to refer only to sulfate; interpreted in that manner, the sentence accurately describes the effect of sulfate in the glass as insignificant.

We are fortified in our interpretation of the specification by the fact that PPG has not offered a satisfactory alternative construction. PPG's position at trial was that a "significant" change in the glass properties is one that results in a glass product that does not satisfy the color or transmittance limitations of the patent claims. That proposed definition is suspect, however, because it would mean that any residual sulfur compound in the glass composition could avoid the "consisting essentially of" limitation only by taking the glass outside the other limitations of the patent. If that definition of "significant effect" were adopted, it would have the effect of converting the critical claim language from "consisting essentially of" to "comprising." PPG's witnesses cast further doubt on the correctness of PPG's proposed construction by agreeing that "in the context of science," large changes in glass properties that still fell within the color and transmittance limitations of the claim would be considered significant. We therefore reject PPG's argument that the specification requires that the claims of the '886 patent be construed to encompass glass products that contain iron sulfide in any amount, as long as the accused products satisfy the other limitations of the claims.

PPG makes the further contention that the claim construction adopted by the district court must be incorrect because it would exclude PPG's preferred embodiment from the patent, a result that is "rarely, if ever, correct." *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1583, 39 USPQ2d 1573, 1578 (Fed. Cir. 1996). PPG's argument is that the preferred embodiment described in the '886 patent is made by the float process, uses sulfate as a melting and fining aid, and can therefore be expected to have a tin layer containing iron sulfide, just as SMG glass does.

The problem with PPG's argument is that the claim construction adopted by the dis-

trict judge did not exclude from coverage all glass products that contain some amount of iron sulfide. The district judge properly recognized that the patent is silent about iron sulfide and about what constitutes a material effect on the properties of the glass. The court properly left it to the jury to determine whether the amounts of iron sulfide in SMG glass have a material effect on the basic and novel characteristics of the glass. PPG did not prove that its preferred embodiment would necessarily be excluded by the claim construction given to the jury.

### III

PPG's final argument is that even if the district court's claim construction was correct, the verdict of non-infringement must be overturned because a reasonable jury could not have found that the iron sulfide residues resulting from the float glass process materially affect the basic and novel characteristics of the invention. Although it was undisputed that the iron sulfide in the SMG glass causes small changes in the transmittance and dominant wavelength of the glass, PPG contends that the jury could not properly find that those changes were material for purposes of determining whether the colorant portion of the SMG glass "consist[ed] essentially of" the ingredients listed in claim 4 of the '886 patent.

[4] Although the evidence was in conflict on this point, there was substantial evidence from which the jury could conclude that the iron sulfide in SMG glass had a material effect on the basic and novel properties of the glass. Guardian introduced evidence that those of skill in the art would regard even small changes in the color or transmittance of tinted glass to be material. At one point, that view was apparently shared by PPG's witnesses. Guardian introduced deposition testimony from a PPG expert witness to the effect that he considered any "measurable" change in color or transmittance to be material or significant. Moreover, Guardian's technical expert elaborated that one of skill in the art would consider measurable, reproducible changes that are "distinctly bigger" than could be expected from experimental error to be material. Guardian's plant manager also testified as to why small but measurable changes in glass properties are important to those of skill in the art. Accordingly, although the evidence showed that the effects of the iron sulfide in SMG glass were small, there was sufficient evidence from which the jury could find that the effects were material.

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In response to the argument that SMG glass is identical to the preferred embodiment in PPG's patent, Guardian distinguished SMG glass by introducing evidence that it uses 500% more sulfate as a batch material in producing SMG glass. Although most of the sulfate dissipates as a gas, Guardian's evidence showed that SMG glass retains approximately 40% more sulfate than the preferred embodiment. The jury was entitled to credit that evidence over contrary evidence adduced by PPG, which tended to show that the effect of iron sulfide in SMG glass and the preferred embodiment of the patent were identical in most respects. We therefore must uphold the jury's conclusion that SMG glass does not infringe claim 4 of the '886 patent because the colorant portion of the SMG glass does not "consist essentially of" the listed ingredients.

**AFFIRMED.**

Michel, J., dissenting.

I cannot join the majority opinion which upholds a jury verdict of non-infringement which no reasonable jury could have reached. Our precedent is well settled that when a chemical invention is claimed using "consisting essentially of" language, the mere presence of an additional, unclaimed substance — here, iron sulfide — does not avoid infringement unless it has a "material" effect on the basic and novel properties of the claimed invention. No reasonable jury could hold that an alteration in the dominant wavelength of the glass from approximately 500 to approximately 503 nanometers, and alterations in the ultraviolet and visible light transmittance on the order of 0.5% represent a material effect on the properties of the glass considered in light of the patent. The specification recites a range of 495 to 535 nanometers and the specific language of the claim describes a glass with ultra-violet transmittance of no greater than 31% and visible light transmittance of at least 70%. The written description specifies that sodium sulfate, the precursor of the non-claimed iron sulfide, is to be used as a fining agent in heating the ingredients of the glass and does not have a material effect on transmittance properties.

I believe that if the court had provided a proper definition of materiality in its jury instructions, a finding of infringement would have resulted. Similarly, if on post-trial motion for judgment as a matter of law of literal infringement the court had

applied the correct definition of materiality in the context of the claims and written description of this patent, it would have granted the motion. Because the court did neither, I would reverse and direct the district court to enter a liability judgment of literal infringement and proceed to decide damages.

U.S. District Court  
District of Puerto Rico

Upjohn Co. v. MOVA Pharmaceutical Corp.

No. 95-1378 (PG)

Decided August 17, 1998  
Amended August 25, 1998

**PATENTS****1. Infringement — Doctrine of equivalents — In general (§120.0701)**

Substantial evidence supports jury's verdict that accused drug for treatment of diabetes does not infringe patented formulation under doctrine of equivalents, since there was extensive testimony from fact and expert witnesses, describing in detail differences between spray-dried lactose required by claims and equivalent ingredient in accused formulation, on which jury could have based its verdict, since there was considerable evidence presented concerning combination of ingredients in accused drug, and since there was substantial evidence concerning differences in manner in which accused formulation performs function of rapid dissolution.

**2. Patentability/Validity — Obviousness — Combining references (§115.0905)**

Substantial evidence supports jury's verdict that invention of patent claiming spray-dried lactose formulation of micronized glyburide, used for treatment of diabetes, would have been obvious to one of ordinary skill in art, since scope and content of prior art included all of claimed ingredients, including spray-dried lactose and micronized glyburide, since there was evidence that prior art included patents containing more than 70 percent spray-dried lactose and micronized anti-diabetic active ingredients, as required by claims, and since there was substantial evidence from which jury could conclude that person of ordinary skill in art would have been motivated to make claimed combination, and would have reasonably expected combination to work for its intended purpose.

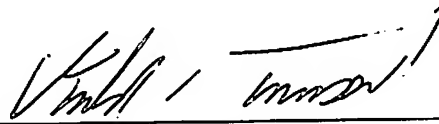
**APPENDIX III**

**Related Proceedings**

**None.**

**CERTIFICATE OF TRANSMISSION**

I hereby certify that this facsimile transmission, consisting of a 30-page Appellant's Brief on Appeal, as well as Appendices I-III, in Docket No. TOS-157-USA-PCT, Serial No. 10/501,462, filed December 13, 2004, is being electronically transmitted to the U.S. Patent and Trademark Office on August 31, 2008.

A handwritten signature in dark ink, appearing to read "Donald E. Townsend", is written over a horizontal line.

Donald E. Townsend